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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,018	11/24/2003	Ritva Verho	2530-120	3149
6449	7590	07/28/2005	EXAMINER	
ROTHWELL, FIGG, ERNST & MANBECK, P.C. 1425 K STREET, N.W. SUITE 800 WASHINGTON, DC 20005			ZEMAN, ROBERT A	
			ART UNIT	PAPER NUMBER
			1645	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

*MA*

## Office Action Summary

Application No.

10/720,018

Applicant(s)

VERHO ET AL.

Examiner

Robert A. Zeman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11-24-03</u> . | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 9-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1-12-2005. Claims 1-8 are currently under examination.

### ***Information Disclosure Statement***

The Information Disclosure Statement filed on 11-24-2003 has been considered. An initialed copy is attached hereto.

### ***Claim Rejections - 35 USC § 112***

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-9 are rendered vague and indefinite by the use of the term "...characterized in that...". It is unclear what limitation is meant to be conferred by said term. How does said term differ from the subsequent recital of "comprises"? As written, one cannot determine the metes and bounds of the claimed invention.

Claims 3 and 6 are rendered vague and indefinite by the use of the term "functionally equivalent derivatives". It is unclear what is meant by said term. What constitutes a derivative?

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What is the basis for determining equivalency? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claims 4 and 5 are rendered vague and indefinite by the use of the term “fungal origin”. It is unclear what is meant by said term. Is applicant claiming that the recited DNA molecule is isolated from a fungi (*Ambrosiozyma monospora*) or that its evolutionarily origin is a fungi?

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(a) as being anticipated by Ishikura et al. (Chemico-Biological Interactions, 2001, Vol. 130-132, pages 879-889 – IDS).

Ishikura et al. disclose the cDNA for diacetyl reductase (DR) isolated from hamster liver (see page 880) and the recombinant production of said enzymes utilizing vectors (see page 883). Moreover, Ishikura et al. further disclose that said DR is identical to L-xylulose reductase (see page 886). Finally, it is deemed, in absence of evidence to the contrary, that the DR disclosed by Ishikura et al. constitutes a “functionally equivalent derivative” of the sequences recited in claims 3 and 6 (SEQ ID NO: 1-2). Therefore, Ishikura et al. anticipates all the limitations of the rejected claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikura et al. (Chemico-Biological Interactions, 2001, Vol. 130-132, pages 879-889 – IDS) in view of Dien et al. (Applied Biochemistry and Biotechnology, 1996, Vol. 57/58 pages 233-240 – IDS).

Ishikura et al. disclose methods for characterizing diacetyl reductase (DR) isolated from hamster liver (see page 880) utilizing PCR to generate cDNAs and the recombinant production of said enzyme utilizing vectors (see page 883). Ishikura et al. differs from the instant invention in that they do not disclose L-xylulose reductase from fungi generally and *Ambrosiozyma monospora* specifically. Dien et al. disclose the yeast *Ambrosiozyma monospora* is capable of utilizing pentose sugars (see abstract). It would have been obvious to one of skill in the art to utilize the methods disclosed by Ishikura et al. to identify the yeast enzymes in the pathway. To

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identify said enzymes the skilled artisan would first separate the genetic material from the yeast (meeting the limitations of claims 1-7). Claims 1-6, as written, read on chromosomal yeast DNA. Adherence to the methodologies of Ishikura et al. would result in the identification and recombinant production of the various yeast enzymes involved in pentose metabolism. One would have been motivated to map out the pathway in the yeast disclosed by Dien et al. in order to be able to produce recombinants to economically produce ethanol from hemicellulose biomasses (see page 233 of Dien et al. with regard to the importance of hemicellulose fermentation).

### ***Conclusion***

No claim is allowed.

SEQ ID NO:1 and 2 are free of the art of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Zeman whose telephone number is (571) 272-0866.

The examiner can normally be reached on Monday- Thursday, 7am -5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on (571) 272-0864. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**ROBERT A. ZEMAN**  
**PATENT EXAMINER**

July 25, 2005